HOW QUAYSIDE WILL MAKE DATA WORK FOR TORONTO — AND PROTECT IT

Sidewalk Toronto Follow
Dec 7, 2018 · 6 min read

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Last week, Sidewalk Labs announced more details on our plans for Toronto's Quayside district. We believe this work represents the combination of world-class urban design and cutting-edge technology to create an extraordinary place. It is also a home-grown response to some of the challenges Toronto (along with other great cities around the world) is facing as it continues to grow, such as traffic congestion, housing affordability, and job creation.

There has been a lot of discussion about data collection in the news lately, particularly around data security and what companies like Sidewalk Labs are doing to protect your privacy. This coming week, Waterfront Toronto's Digital Strategy Advisory Panel will give us the opportunity to discuss the role that data plays in our plans. This blog post covers some of what we will be talking about — you can find the full presentation here.

It may surprise some people, but Sidewalk Labs' business models may end up looking fairly traditional to Torontonians. Building neighbourhoods is something that people have been doing since the city was founded, and we hope to make money by helping to build a great neighbourhood that people want to live and work in. What makes Quayside unique is the type of neighbourhood we'll create: a more livable, greener, more affordable, people-friendly community with lots of public space — the kind of place that will move Toronto to the forefront of contemporary global urban design.

While some of our plans are, or at least may seem, low-tech — like buildings made out of wood, or better pedestrian and cycling connectivity — data will play a role in making this happen. And while collecting data as part of city planning and management isn't new, we believe we can do it with a greater positive impact on quality of life while clearing an even higher bar for privacy.

To put it really simply: we're not interested in creating technology for technology's sake, and collecting data is not part of Sidewalk Labs' business model. But data can help achieve critical objectives — such as helping people move around the city more easily, reducing congestion, preventing deaths from vehicle collisions, radically reducing greenhouse gas emissions by using energy more efficiently, and better managing natural resources like rainwater.

In the overwhelming majority of cases, the data involved will not include personal information. In the infrequent cases where personal information is at issue, we will demonstrate the specific way that it is being used to improve quality of life, obtain meaningful consent, and allow people to opt out.

We have proposed an independent civic data trust to set the rules with particular regard to data gathered in the physical environment, where it is difficult to get meaningful consent, and where allowing people to opt out is sometimes not feasible. This is a challenge that has gone largely unaddressed in the now-commonplace data-gathering activities already taking place in cities. We hope that Quayside can set a new standard for governance related to "urban data," including by ensuring that no private entity — not Sidewalk Labs, not anyone else — controls data that could reasonably be considered a public asset.

You may be asking: what does that all mean for people living or visiting Quayside? Let's look at a few examples, which we will discuss in detail at the next meeting of Waterfront Toronto's Digital Strategy Advisory Panel.

How people use public space

Public life studies — a decades-old practice of documenting how people use public spaces — are being increasingly used in Toronto to improve streets and public spaces, but existing methods are expensive and time-consuming. Together with Gehl Institute and Park People, we prototyped a new digital tool that makes it substantially easier for municipalities and community groups to count how different kinds of people make different uses of a park, creating a snapshot of activity on a particular study day. In our first field test of the app, we worked with local groups Park People and the Thorncliffe Park Women's Committee to help them measure and understand the impact of their work. (Starting this weekend, we will have a new exhibit on this project at 307 — please come visit us and learn more about it!) We completed a Responsible Data Impact Assessment and incorporated privacy by design principles into the project from the start. This tool is not simply meant for use in Quayside, but is intended to be an accessible resource for cities and public space advocates anywhere — we are committed to making the code open-source and available for anyone to use and build upon.

How people get around a neighbourhood

Another way we plan to use data is to improve how people get around the neighbourhood. Toronto already uses data from traffic flow counters, red light cameras, infrared cameras, and cameras with computer vision on King Street. Our plans contemplate mobility management technology that will coordinate the flow of pedestrians, cyclists, and vehicles, to ensure a safe, efficient experience for everyone, in line with the city's objectives. It will use real-time data collected at intersections to manage traffic volume and speed, and data collected from the curb to prevent double-parking. The data involved will either be non-personal from the start or immediately de-identified, after which it could be made available to others to allow for better prediction on transit time or better navigation options for more people. (One exception to this is license plate data of the kind already gathered by government for enforcement efforts.)

Reducing greenhouse gas emissions

We also want to make buildings dramatically more efficient. Right now, many buildings install sensors for lighting, occupancy, temperature, humidity, carbon monoxide, carbon dioxide, air pressure, particulates, and smoke — but the data from these systems is largely siloed, and they don't take into account simple things like local holidays, causing them to expend energy on heating or cooling even though nobody's there. We believe that when building systems are provided with more context and data, holistic improvements will drive building efficiency, resulting in improvements to energy consumption, individual comfort, and cost savings.

Managing stormwater and flooding

Another example is minimizing flooding and sewer overflow from stormwater. We will use hardware and cloud-based optimization algorithms to measure, manage, and operate district stormwater systems. For example, we plan to store rainwater in underground tanks for irrigation of parks and plazas. But when a storm is coming, we could automatically empty the tanks out so that they can capture the excess water rather than letting it overflow the stormwater system, reducing disruption and environmental damage. All the data collected for this purpose is non-personal — e.g. the level of stormwater in an underground tank — and under our current proposal, its use would be regulated by the Civic Data Trust.

We are also excited about new techniques developed by privacy researchers to reduce or eliminate data collection while achieving the same outcomes — in our case, quality of life goals. These include ideas with fancy names "differential privacy," "federated learning" and "zero-knowledge proofs." (Too much to explain here, but go to the links to find out more.) While there are no panaceas, and these technologies have to be applied thoughtfully in order to be effective, we are excited about technology's ability to improve privacy rather than reduce it.

It will be a few years before anyone is living in Quayside — so we have some time to test and refine these ideas. We look forward to hearing feedback from Waterfront Toronto's Digital Strategy Advisory Panel, and the public, as we continue to fine-tune them. We will continue to make privacy and digital governance a priority and stay on top of the latest and best methods to make sure we collect and store the least amount of information to achieve the greatest possible good for Toronto and its people.

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89 1

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